

In the Claims

Claims 10 and 21 have been amended as follows:

1 1-9. (Cancelled.)

1 10. (Currently Amended) An apparatus for selectively forming a silicide
2 comprising:

3 a semiconductor substrate having a surface, a portion of said surface having
4 silicon thereon and a portion of said surface having an insulator thereon,
5 said surface further having an oxide thereover;

6 a mainframe housing at least an interior cleaning chamber for removing said
7 oxide from said surface of said substrate while under a continuous vacuum,
8 and an interior deposition chamber for depositing a metal on said surface of
9 said substrate while under said continuous vacuum;

10 at least one workpiece holder within said mainframe adapted to hold said
11 substrate;

12 at least one pump adapted to evacuate said mainframe to maintain said
13 continuous vacuum in said mainframe such that said continuous vacuum
14 comprises a constant vacuum throughout said mainframe and each of said

15 interior cleaning chamber and said interior deposition chamber during said
16 selective silicide formation;
17 at least one line operatively connected between said at least one pump and
18 said mainframe for evacuating said mainframe;
19 at least one input line adapted to provide a chemical agent into said interior
20 cleaning chamber within said mainframe while under said continuous
21 vacuum, said chemical agent adapted to remove said oxide from said
22 surface of said substrate;
23 at least one output line adapted to remove said cleaning agent and said
24 removed oxide from said interior cleaning chamber and said mainframe;
25 a reactor in said deposition chamber within said mainframe, said reactor
26 adapted to deposit said metal onto said silicon and insulator portions on
27 said substrate surface while under said continuous vacuum;
28 a heating element, said heating element adapted to heat said substrate to an
29 elevated temperature to form a silicide on said substrate surface over the
30 silicon portion by reaction with the metal deposited thereon, while the
31 metal remains unreacted over the insulator portion; and
32 an etchant to remove unreacted metal from the substrate surface while leaving
33 said silicide over portions of said semiconductor substrate.

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1 11. (Canceled.)

1 12. (Cancelled.)

1 13. (Previously Amended) The apparatus of claim 10 further comprising an
2 interior heating chamber within said mainframe for heating said substrate to form
3 said silicide on said substrate surface.

1 14. (Previously Amended) The apparatus of claim 13 wherein said apparatus is
2 adapted to transfer said substrate between said interior cleaning chamber and said
3 interior deposition chamber without breaking said continuous vacuum.

1 15. (Original) The apparatus of claim 14 wherein said substrate is a silicon
2 substrate.

1 16. (Original) The apparatus of claim 15 wherein said apparatus is adapted to
2 remove said oxide from said surface of said substrate using a nitrogen triflouride
3 cleaning process.

1 17. (Original) The apparatus of claim 16 wherein said metal is cobalt.

1 18. (Previously Amended) The apparatus of claim 17 wherein said interior
2 deposition chamber is a vapor sputtering device.

1 19. (Previously Amended) The apparatus of claim 18 wherein said apparatus is
2 further adapted to transfer said substrate to said interior heating chamber from said
3 interior deposition chamber.

1 20. (Original) The apparatus of claim 19 wherein said silicide is cobalt silicide.

1 21. (Currently Amended) A system for selectively forming a silicide on a
2 surface of a semiconductor substrate comprising:
3 said semiconductor substrate having said surface, a portion of said surface
4 having silicon thereon and a portion of said surface having an insulator
5 thereon, said surface further having an oxide thereover;
6 a mainframe comprising at least an interior cleaning chamber adapted to
7 remove said oxide from said surface of said substrate while under a
8 continuous vacuum, and at least an interior deposition chamber adapted to
9 deposit a metal on said surface of said substrate while under said
10 continuous vacuum;
11 at least one pump adapted to evacuate said mainframe to maintain said
12 continuous vacuum in said mainframe such that said continuous vacuum

13 comprises a constant vacuum throughout said mainframe and each of said
14 interior cleaning chamber and said interior deposition chamber during said
15 selective silicide formation;

16 a chemical agent input into said interior cleaning chamber within said
17 mainframe, said chemical agent for removing said oxide from said surface
18 of said substrate while under said continuous vacuum;

19 a reactor in said deposition chamber within said mainframe, said reactor for
20 depositing said metal onto said silicon and insulator portions on said
21 substrate surface while under said continuous vacuum;

22 a heating element, said heating element adapted to heat said substrate to an
23 elevated temperature to form a silicide on said substrate surface over the
24 silicon portion by reaction with the metal deposited thereon, while the
25 metal remains unreacted over the insulator portion; and

26 an etchant to remove unreacted metal from the substrate surface while leaving
27 said silicide over portions of said semiconductor substrate.

1 22. (Canceled.)

1 23. (Previously Amended) The system of claim 21 wherein said apparatus is
2 adapted to transfer said substrate between said interior cleaning chamber and said
3 interior deposition chamber without breaking said continuous vacuum.

1 24. (Previously Added) The system of claim 21 wherein said metal is cobalt.

1 25. (Previously Added) The system of claim 21 wherein said chemical agent is
2 selected from the group consisting of nitrogen triflouride and argon.

1 26. (Previously Added) The system of claim 21 wherein said reactor for
2 depositing said metal on said surface of said substrate is a vapor sputtering device.

1 27. (Previously Amended) The system of claim 21 wherein said heating
2 element is enhouised within said mainframe.

1 28. (Previously Amended) The system of claim 21 wherein said heating
2 element is external thereto said mainframe.

1 29. (Previously Added) The system of claim 21 wherein said unreacted cobalt
2 is removed using an etchant comprising hydrogen peroxide and sulfuric acid.

1 30. (Canceled.)